California Division of Mines and Geology

Fault Evaluation Report FER-92

May 21, 1979

1. Name of fault group

Unnamed group of fault features along southeasterly projection of San Andreas fault.

2. Location of features

About 4 km southeast of Niland, Imperial County, California (figure 1).

3. Reason for evaluation

This area lies within the 1978 study area of the 10-year program for fault evaluation.

4. List of references

Babcock, E.A., 1971, Detection of active faulting using oblique infrared aerial photography in the Imperial Valley, California: Geological Society of America Bulletin, v. 82, n. 11, p. 3189-3196.

Jennings, C.W., 1975, Fault map of California with locations of volcanoes, thermal springs and thermal wells: California Division of Mines and Geology, California Geologic Data Map Series, Map No. 1, Scale 1:750,000.

Real, C.R., Parke, D.L., and Toppozada, T.R., 1978, Magnetic tape catalog of California earthquakes, 1900-1974: California Division of Mines and Geology.

5. Summary of available data

Babcock made a search for undiscovered faults along the east and west sides of the Imperial Valley, using color infrared photography. He flew the photography himself. He observed what he believed to be evidence for the existance of fault traces near Niland. He states (p. 3191), "Evidence of faulting seen on the infrared photography consists of zones of mottled appearance, trending in a

northwest-southeast direction, caused by differences in vigor of crops...and of a line of anomalous infrared reflectance seen at one locality...Ground examinations revealed three places where small concrete canals are offset about 6 inches right laterally, and several places where asphalt roads are cracked in a northwest-southeast direction or have been patched repeatedly...The number of offset man-made structures is not great because there are few paved roads or concrete lined canals in the area..."

Figure 3 shows the fault traces that Babcock found. His figure 2 is the best available map of these features, but at his scale it was not feasible to plot his data on 7 1/2 minute quadrangle maps.

The "A" quality epicenter map (figure 2) shows no events closer than about 15 km to the Niland area.

6. Interpretation of aerial photos

None.

7. Field observations

None.

8. Conclusions

If Babcock's evidence and interpretations are valid, then these traces are indeed active strands of the San Andreas fault zone. But, I would at least have to see the offset features on the ground before I drew any definite conclusions.

9. Recommendations

I recommend that no further consideration be given to these faults (?) at this time. The features that Babcock mapped are too limited in physical extent, and the evidence open to question. However, if at a later date, these features are

considered for zoning, I recommend that an on-the-ground examination of the evidence for offset be undertaken.

10. Investigating geologist's name and date

Drew P. Smith

DREW P. SMITH
May 21, 1979

I agree with recommendation not to zone as area is not under development and data not adequate however, active faults may exist and warrant additional investigation should the opportunity arise.
CWH
5/21/79

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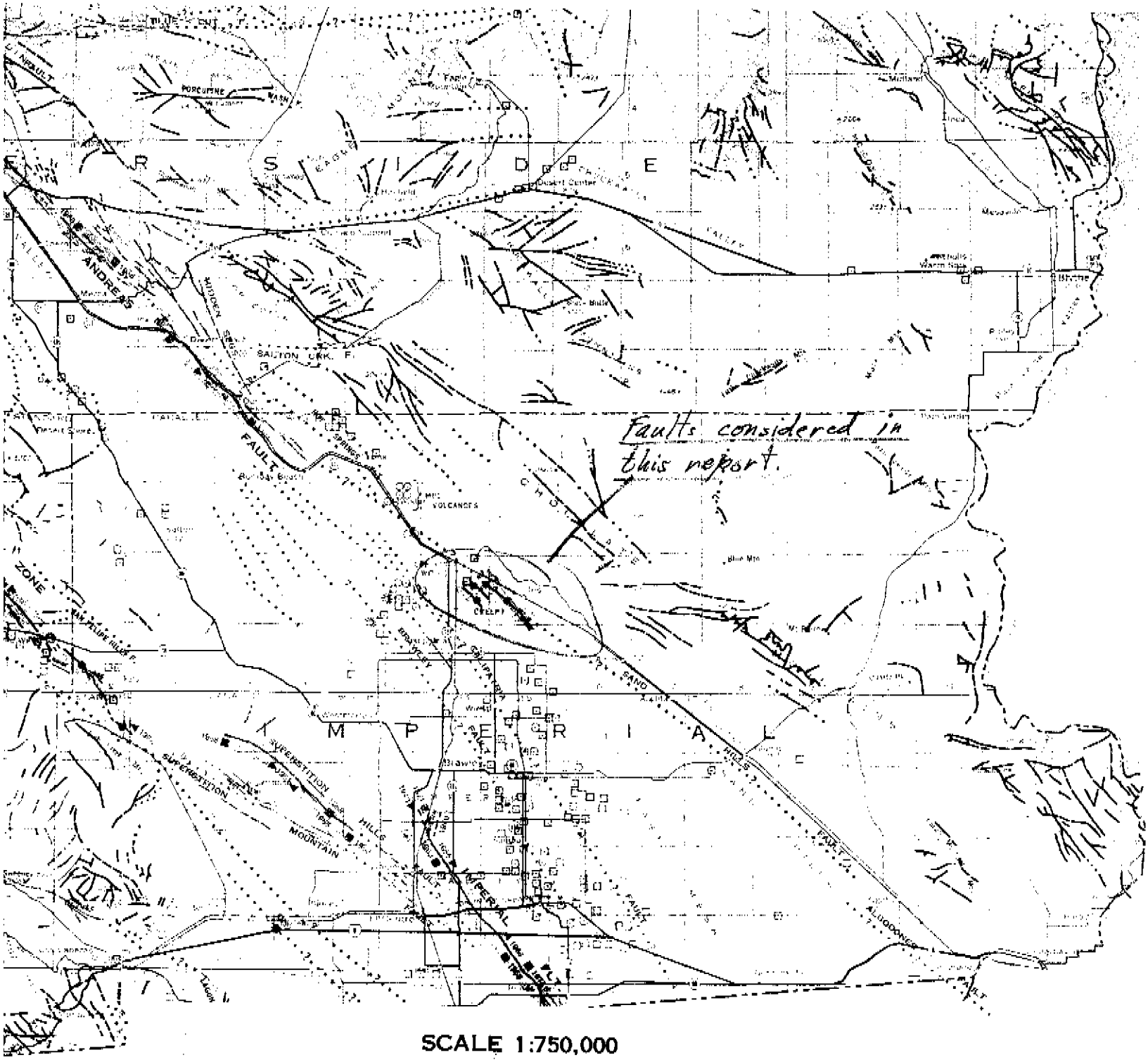
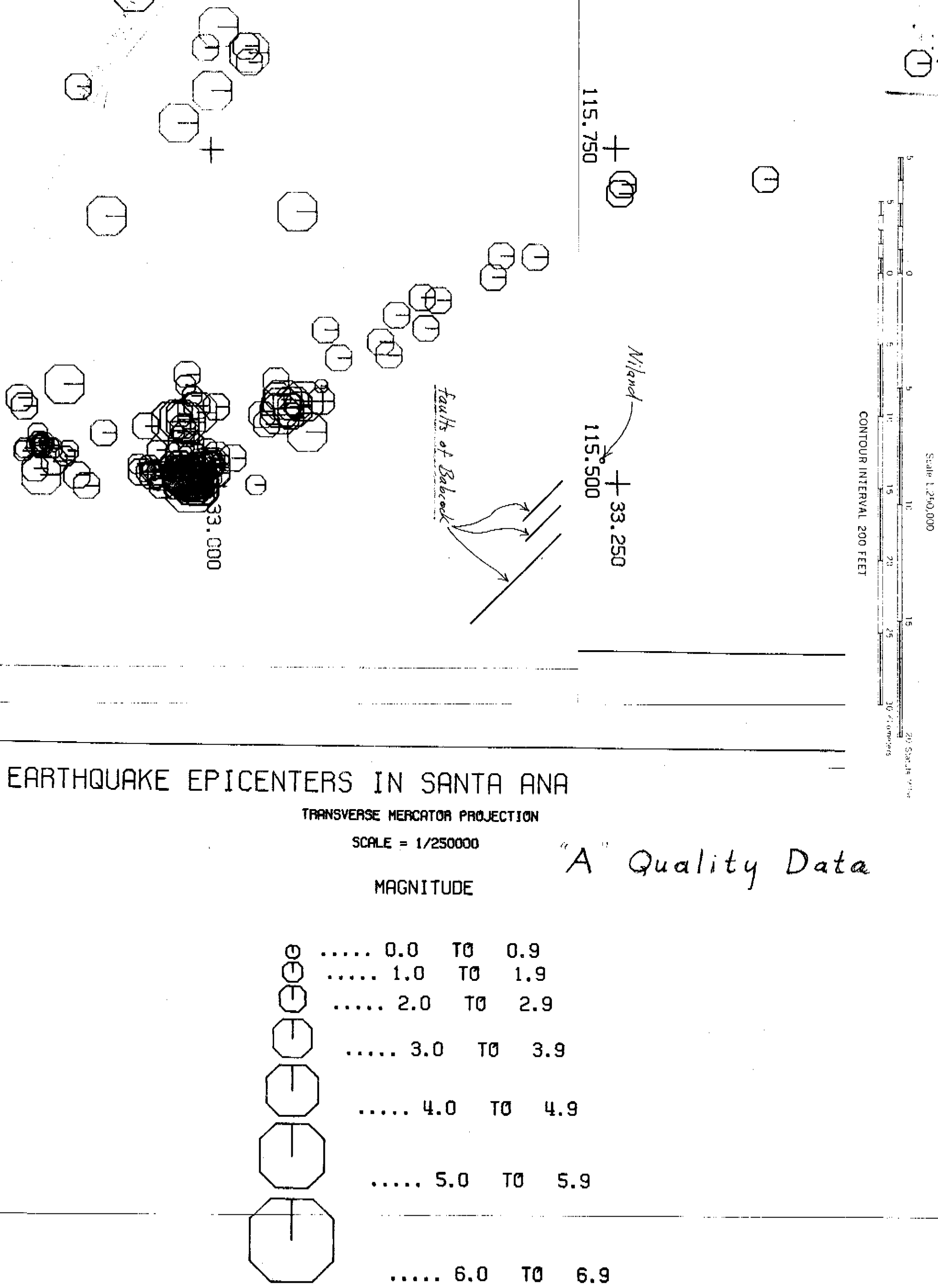


Figure 1. Index map showing the location of the fault traces near Niland. Map is modified from Jennings (1975).

grant from the Depart-
housing Act of 1968, as

s & Heintz Map Corporation, Washing



EARTHQUAKE EPICENTERS IN SANTA ANA

TRANSVERSE MERCATOR PROJECTION

SCALE = 1/250000

"A" Quality Data

MAGNITUDE

..... 0.0 TO 0.9
..... 1.0 TO 1.9
..... 2.0 TO 2.9
..... 3.0 TO 3.9
..... 4.0 TO 4.9
..... 5.0 TO 5.9
..... 6.0 TO 6.9

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Figure 2. Seismicity in the regional vicinity of the Niland fault traces. "A" quality epicentral plots from Real and others (1977).

DATA SOURCES ARE: FOR 1900-1931, CDMG SPECIAL REPORT 135; FOR 1932-1974, CALTECH AND U.C.BERKELEY FOR SOUTHERN AND NORTHERN CALIFORNIA RESPECTIVELY; AND SINCE 1969, THE USGS FOR CENTRAL CALIFORNIA. A COMPREHENSIVE CATALOG OF CALIFORNIA EARTHQUAKES IS AVAILABLE ON MAGNETIC TAPE AND MICROFICHE FROM CDMG.)

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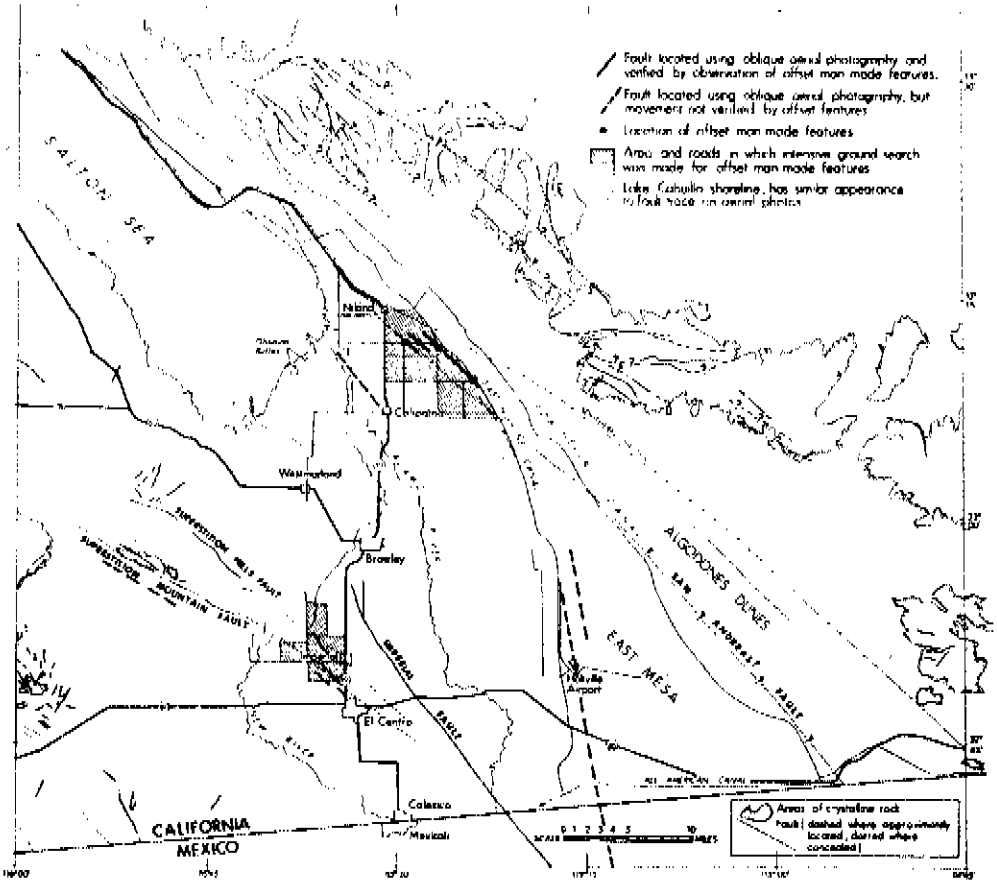

Figure 2. Map of Imperial Valley showing fault traces located using oblique infrared aerial photography (heavy lines), and areas and roads where a search was made for man-made features offset by faulting.

Figure 3. Reproduction of figure 2 of Babcock (1971). The dark black lines represent the fault traces that Babcock found near Niland. The black dots represent places of offset evidence found on the ground.